

## CLAIMS

I claim:

1. A method executed by a mechanical, electronic or computer system for generating machine control instructions, the method comprising the steps of:

reading in a user input to select an object from a library of objects, wherein the objects consist of sets of machine control instructions for performing one or more functions;

connecting the selected object to a network of objects consisting of those objects previously selected and connected by the user, including identifying the inputs and outputs of the selected object and connecting these inputs and outputs to the inputs and outputs of the other objects in the network;

generating machine control instructions using the instructions contained in the network of objects;

updating the network of objects and the connections in the network to accurately reflect any changes made to the generated machine control instructions or to the network of objects.

2. The method of claim 1, wherein the generation step and updating step are deferred until the user has completed constructing the entire network of objects.

3. The method of claim 1, wherein the functions contained in the objects are used to generate the corresponding sets of instructions for inclusion in the generated machine control instructions.

4. The method of claim 1, wherein the generated code consists of computer instructions to load the code libraries represented by the objects.

5. The method of claim 1, wherein the user is a computer program.

6. The method of claim 1, wherein the machine control instructions are computer instructions belonging to an instruction set architecture.

7. The method of claim 1, wherein the machine control instructions consist of source code in a computer programming or scripting language.

8. The method of claim 1, with the additional final step of translating or compiling the machine control instructions into another format of machine control instructions.

9. The method of claim 1, wherein the library of objects includes primitive operators for mathematical operations.

10. The method of claim 1, wherein the library of objects includes container objects that contain other objects or data.

11. The method of claim 1, wherein the user input is generated by the manipulation of graphical depictions of objects on a computer or video display screen or monitor, said manipulation being controlled by a computer mouse or a keyboard or some combination of a computer mouse and keyboard.

12. The method of claim 1, wherein the user inputs include the manipulation in physical space of virtual representations of the objects, provided by a virtual reality system.

13. The method of claim 12, wherein the virtual reality system includes a force-feedback or haptic interface.

14. The method of claim 1, wherein the user input consists of the movement and connection of physical objects in physical space corresponding to objects in the library.

15. The method of claim 1, further consisting of the step of removing any number of objects from the network in response to user inputs.

16. The method of claim 1, further consisting of the step of modifying existing connections of objects in the network in response to user inputs.

17. The method of claim 1, further consisting of the step of monitoring or tracing the path of data flow and execution of the generated code by visually indicating activity in active objects in the network.

18. The method of claim 1, wherein the user inputs are provided by at least one user over a network connection.

19. The method of claim 1, wherein said step of updating the network of objects includes updating the network of objects to reflect changes made by at least one remote user over a network connection.

20. The method of claim 1, further consisting of the step of creating at least one new object of machine control instructions from the generated code.

21. A method for constructing a high-level object model from generated machine control instructions, the method comprising the steps of:

reading in a sequence of machine control instructions for performing one or more functions;

searching a library of objects for one or more objects that generate the sequence of machine control instructions read;

parsing each matched sequence of machine control instructions to determine the objects connected to the inputs and outputs of each matching object found in the library of objects;

connecting each matched object found in the library of objects to the other objects in the high-level model found in the previous steps.

22. The method of claim 21, wherein the original machine control instructions were generated from a source file by a compiler.

23. The method of claim 21, wherein the user is a computer program.

24. The method of claim 21, with the additional final step of generating machine control instructions from the high-level model.

25. The method of claim 24, wherein the format of the newly generated machine control instructions differs from that of the original machine control instructions.

26. The method of claim 21, further consisting of the step of modifying connections of objects in the network in response to user inputs.

27. The method of claim 21, further consisting of the step of monitoring or tracing the path of data flow and execution of the generated code by visually indicating activity in active objects in the network.

28. The method of claim 21, wherein the user inputs are provided by at least one user over a network connection.